

Prevalence of Secondary Conditions Among People With Disabilities

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We analyzed data from 2075 respondents to the disability supplement of the 2001 Washington State Behavior Risk Factor Surveillance Survey to describe population prevalence of secondary conditions among adults with disabilities. Eighty-seven percent of respondents with disabilities and 49% without disabilities reported at least 1 secondary condition. Adjusted odds ratios for disability for 14 of 16 conditions were positive and significant. The association of disability with substantial disparities in common conditions shows a need for increased access to general and targeted prevention interventions to improve health.

One in 5 Americans reports disability or limitation in major life activities because of physical, mental, or emotional conditions lasting 6 or more months.¹ Disability is increasing as the population ages with chronic conditions and more young people survive birth- and injury-related limitations.² People with disabilities are at risk for “secondary conditions,” preventable physical, mental, and social disorders resulting directly or indirectly from an initial disabling condition.^{3–5} There is agreement that prevention of secondary conditions should be a major component of health promotion for people with disabilities.^{3,5} What is known about the prevalence of these conditions comes from clinical studies of patients and convenience samples.^{6,7} This article reports the first effort to collect data on population prevalence and impact of common secondary conditions.

METHODS

Sixteen telephone survey questions about common secondary conditions were adapted from an existing instrument⁸ and were piloted in interviews with 98 adults with dis-

abilities. These questions were included in the disability supplement to the 2001 Washington State Behavior Risk Factor Surveillance Survey (BRFSS). The BRFSS is a random-digit-dialed annual telephone survey of the noninstitutionalized population aged 18 years and older.⁹ The survey interviewed 1 adult in 2075 households using BRFSS methods that gave a 43% response rate.

Persons who met the BRFSS disability criteria were asked whether they had experienced each of 16 secondary conditions in the past 12 months as a result of their primary impairment and, if so, how big of a problem it had been. Persons without disabilities were asked whether they had experienced each of the 16 conditions in the past 12 months and its impact using the same wording without reference to an underlying cause. The sample was weighted by age, gender, and race to represent the state population. Chi-square and logistic regression analyses were run in SUDAAN 75 (Research Triangle Institute, Research Triangle Park, NC) to account for the survey's multistage stratified sampling.

RESULTS

One-quarter of sample adults (25.7%; $n=545$) met BRFSS criteria for disability, reporting limitations in daily activities or use of special equipment (mobility aids, adapted telephones, etc.). Respondents with disabilities were more likely to be female (56.3% vs 49.3% for no disability; $P=.0064$), to be older (mean age 52.9 vs 42.1 years), to have incomes below \$25 000 (39.0% vs 18.4%), to be divorced or widowed (29.0% vs 13.5%), and to report fair or poor health (38.5% vs 4.9%) (all $P<.0000$). Respondents were representative of the Washington adult disability population¹⁰ in terms of age, gender, ethnicity, and employment but had more education than that population (per the 2000 census).

Eighty-seven percent of those with disabilities reported at least 1 condition they said was a result of their disability, and 49% of persons without limitations reported at least 1 condition ($P<.0001$). People with disabilities reported more conditions than did those without limitations (mean of 4.02 vs 1.28 conditions per respondent; $P<.0001$) (data not shown). Only persons responding that a

TABLE 1—Rates of Conditions That Are a “Very Big” or “Moderate” Problem in Total Sample and in People With and Without Disabilities

Condition ^a	Rate in Total Sample, % ($n=2075$)	SE	Rate in Disability Group, ^b % ($n=545$)	SE	Rate in No Disability Group, % ($n=1530$)	SE	Chi-Square for Independence
Chronic pain in muscles, joints	23.8	1.02	55.6	2.42	14.2	0.97	204.56*
Sleep problems	22.4	1.04	41.8	2.35	16.3	1.11	91.87*
Extreme fatigue	20.7	0.95	44.8	2.39	13.2	0.92	140.57*
Weight or eating problems	19.8	0.95	39	2.31	13.7	0.97	96.98*
Periods of depression	17.2	0.89	33.5	2.26	12.1	0.88	73.13*
Skin problems	14.2	2.37	22	4.42	9	2.44	6.29**
Muscle spasms	11.4	0.74	25.5	2.01	7	0.71	73.6*
Respiratory infections (not colds)	10.9	0.76	20.9	2.01	7.8	0.74	35.43*
Falls or other injuries	10.2	0.73	20.6	1.99	6.9	0.69	40.37*
Bowel/bladder problems	9.8	0.68	22.8	1.97	5.7	0.62	66.16*
Serious episodes of anxiety	9.6	0.70	19.9	1.9	6.3	0.69	43.9*
Lack of romantic relationships	8.4	0.67	14.9	1.68	6.3	0.70	21.96*
Problems getting out/getting around	8.3	0.64	22.4	1.95	3.9	0.53	80.97*
Problems making/seeing friends	7.4	0.65	12.7	1.65	5.7	0.66	15.29*
Feelings of being isolated	5.6	0.61	14.8	1.64	5.3	0.60	29.51*
Asthma	5.3	0.53	12.2	1.61	3.4	0.48	29.18*

^aConditions are ranked in order of decreasing population prevalence. Numbers shown are for the sample, but data are weighted to match the Washington State population.

^bDisability group includes those reporting any limitation in any activities or use of special equipment.

* $P<.0001$; ** $P=.012$. All P values are 2-tailed.

condition posed a “moderate or very big problem” in the last 12 months were counted as reporting that condition (Table 1).

The prevalence (12% to 56%) of each of the 16 secondary conditions in the disability group (56% to 12%) was 2 to 3 times higher than among adults without disabilities. Crude odds ratios for disability for each secondary condition were large and uniformly significant (Table 2). When adjusted for age, gender, education, income, and health status in a multivariate logistic regression, 14 of 16 odds ratios for disability were significant, ranging from 4.94 for chronic pain to 1.67 for difficulty making and keeping friends. For the 8 most prevalent conditions (pain, weight problems, fatigue, difficulty getting out into the community, falls and injuries, sleep problems, muscle spasms, bowel and bladder problems), having a disability was the strongest predictor of the condition. Age and health status contributed more to having anxiety, depression, social isolation, and asthma than did disability, but disability remained a significant predictor.

DISCUSSION

This is the first population-based prevalence study to show that secondary conditions are common among adults with disabilities. These findings converge with those from the BRFSS Quality of Life module, wherein adults with disabilities are consistently more likely than the nondisabled to report unattributed conditions such as experiencing pain that interferes with activities, feeling sad or depressed, being worried or anxious, or sleeping poorly.¹¹

As with other health promotion, prevention of secondary conditions requires intervening in the complex relationship between individual risk factors and environmental determinants of health and quality of life.^{12,13} For people with disabilities, access to services and opportunity for equal participation may be as important to their health as medical interventions.⁴ Population-based health promotion addressing common issues such as obesity, physical activity, and falls should be augmented with targeted approaches to ensure that people with disabili-

TABLE 2—Crude and Adjusted Odds Ratios of Disability When the Dependent Variable Is “Moderate or Very Big Problem” for Each Condition

Condition	Crude OR for Disability ($P < .0000$)	Adjusted OR for Disability ^a	95% CI for Adjusted OR	P
Chronic pain in muscles, joints	7.28	4.94	3.61, 6.76	.0000
Problems getting out/around	7.22	4.12	2.74, 6.45	.0000
Falls or other injuries	3.59	3.12	2.07, 4.71	.0000
Extreme fatigue	5.35	3.03	2.18, 4.21	.0000
Weight or eating problems	4.02	2.96	2.15, 4.10	.0000
Muscle spasms	4.56	2.85	1.90, 4.27	.0000
Sleep problems	3.67	2.70	1.97, 3.71	.0000
Skin infections, problems	2.86	2.52	0.65, 9.77	.1808
Bowel/bladder problems	4.91	2.35	1.57, 3.50	.0000
Asthma	4.13	2.26	1.29, 3.93	.0041
Serious episodes of anxiety	3.68	2.19	1.42, 3.37	.0004
Periods of depression	3.64	2.18	1.53, 3.09	.0000
Feelings of being isolated	3.11	2.09	1.34, 3.28	.0013
Respiratory infections	3.11	1.91	1.31, 2.80	.0008
Lack of romantic relationships	2.59	1.44	0.93, 2.25	.1036
Problems making friends	2.42	1.67	1.01, 2.75	.0450

Note. OR = odds ratio; CI = confidence interval. All P values are 2-tailed.

^aAdjusted for age (18–24 y, 25–44 y, 45–64 y, ≥ 65 y), gender, education (less than high school graduate, high school graduate, education past high school), income ($< \$25,000$, $\$25,000$ – $\$49,999$), and health status.

^bDisability group includes those reporting any limitation in any activities or use of special equipment; data are weighted. Conditions are ranked by decreasing adjusted OR.

ties are reached, have access to services, and can benefit from them.¹⁴ Older adults with disabilities—who are particularly vulnerable to secondary depression, anxiety, asthma, and social isolation—are a particular focus of concern.

These findings must be treated with caution. They are self-reported cross-sectional data, subject to the usual limitations on attribution of causality. The survey questions have not been validated in a nondisabled population. The introductions to the questions differed for people with and without disabilities, as respondents with disabilities were asked to attribute conditions to their primary impairment. People may report more limitation when they are asked to attribute it to a specific cause (e.g., injured arm).¹⁵ This might contribute to higher rates among people with disabilities, although the BRFSS Quality of Life data suggest that the findings are not an artifact of this attribution. Finally, although there is broad agreement on the importance of secondary conditions to people with disabilities, there is no consensus on definition, or on how to distinguish, for example, whether chronic joint pain

is secondary to or the primary cause of a person's disability. However, the precision of the “secondary” label is less important than the clear health promotion challenge that these data pose: addressing and reducing these substantial disability-related disparities in common and preventable health conditions.¹⁴ ■

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Contributors

D. Lochner Doyle conceived the study. S. Kinne conducted the analyses and wrote the paper with D.L. Patrick.

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Human Participant Protection

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